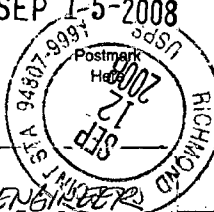


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T. A. Lizarraga
Manager

**Health, Environment &
Safety**
Chevron Products Company
P. O. Box 1272
Richmond, CA 94802-0272
Tel 510 242 1400
Fax 510 242 5353
hink@chevron.com

September 12, 2008

Ms. Carla Fritz
Cal OSHA Compliance Engineer
Department of Industrial Relations
Northern California Process Safety Management
1450 Enea Circle, Suite 550
Concord, CA 94520

Cal OSHA Document Request Regarding TEL Facility Investigation

Dear Ms. Fritz

In response your latest document requests (reference e-mails from you to Mark Robinson and Pete Sarmicanic dated 9/3/08), please find attached our Operating Integrity Assessment for the No. 1 Lead Line. Using a variety of procedures widely used in the industry for evaluating piping applications, the assessment estimated potential failure pressures in the 756 to 1042 PSI range. Since the piping system has a normal operating pressure range of 75 to 200 PSI with a maximum of 250 PSI a safety factor of at least three times likely failure pressure has existed since the inspection of 3/27/03. Additionally, since the likely mechanism of failure was due to localized corrosion pitting, any failure prior to repairs conducted in August 2008 would most likely have resulted in a small leak, and not catastrophic failure of the line.

The refinery follows API RP-570, Title 8 Section 6533, and our internal Chevron California Piping Standard when conducting an initial engineering review of piping. Agency review and approval of a written Fitness for Service program is not required for piping systems per Title 8 Section 6553.

I trust that this response aids you in concluding your investigation of the allegations related to this matter. However, if you have additional questions, please call or e-mail Mr. Mark Robinson at (510) 242-2233 or markrobinson@chevron.com.

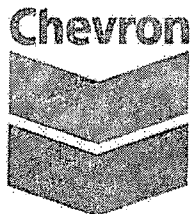
Original Signed By
T. A. Lizarraga

T. A. Lizarraga

Attachment

Recipient Name
Company Name
August 1, 2005
Page 2

bcc:J Buchanan
M Robinson
M Brennan
P Canzius



Energy Technology Company
Facilities Engineering
100 Chevron Way, Bldg. 10-2520
Richmond, CA 94801
Tel 510-242-7218
Fax 510-242-4614
davebosi@chevron.com

Richmond, California
September 12, 2008

**Richmond Refinery – Operating Integrity Assessment of the Blending and Shipping Plant
No. 1 Lead Line**

T. Lizarraga

BACKGROUND

The subject 4-inch, A-53 carbon steel, schedule standard, aviation fuel gas transfer line (or 1 Lead Line) has sustained corrosion damage at several locations over its length. The corrosion is primarily external, however a Plant inspection report, dated 27 March 2003, also notes local areas of internal corrosion.

On 20 August Chevron ETC was contacted to participate with Plant staff in completing a walkdown inspection of the entire line. The objective of the inspection was to review the previously documented locations of corrosion damage and visually determine the most severe metal loss location. Subsequently non-destructive examination (NDE) was completed to determine the through-thickness condition of the pipe at the location of most severe external corrosion damage.

The Plant advised that the 1 Lead Line was shutdown and would not return to service prior to completion of qualified welded and/or mechanical clamp (encapsulation) repairs. In the interim the Plant requested that a pressure boundary integrity assessment of the limiting corrosion damaged area be completed to quantitatively establish its former in-service failure threshold.

T. Lizarraga

**Richmond Refinery – Operating Integrity Assessment of the Blending and Shipping Plant 1
Lead Line**

September 12, 2008

Page 2

Analysis

Based on ASME B31.3 piping code stipulated visual (VT) and radiographic (RT) inspection techniques, both ETC and Plant staff (K. Gish) concurred that the limiting locally corroded region of the 1 Lead Line would be fully bounded, on minimum thickness, by an idealized uniform 0.1 inch remaining pipe wall thickness, with the inclusion of a local pit having a 0.25 inch diameter and a depth of 0.05 inches, as compared to the nominal new condition of 0.237 inches wall thickness.

The transfer line material is ASTM A-53 carbon steel and it was conservatively assumed to have the lowest strength¹ properties as defined by the Grade A specification. Specifically, the material yield strength, at ambient and low temperatures (200 °F), is 30 ksi, the ultimate strength is 48 ksi and the ASME B31.3 code membrane allowable stress is 16 ksi. The piping pressure induced hoop stress is governed by a membrane stress state, and thereby the stated allowable stress is utilized by the design code to establish the minimum required pipe wall thickness.

The location of the reported worst corrosion damage is near a deadweight pipe support. Field assessment² of the support and adjacent spans concluded that supplemental loading due to deadweight bending could be taken as negligible. The line operates essentially at ambient, so no meaningful thermal component of loading is developed.

Given the above simplified geometry and pressure-dominated loading basis, the described idealized defect can be evaluated by various closed-form strength, or rupture, evaluation procedures widely used in the industry for both process piping and pipeline applications. Table 1 tabulates these results and the detailed worksheets³ are attached in Appendix 1.

In Table 1 note that the NG-18 method is a determination basis for a leaking, or weeping, failure versus a catastrophic failure condition. In this case the pit has very low surface area, and a 50 percent depth relative to the surrounding pipe wall thickness. So intuitively the global failure result of NG-18 is sensible. Specifically, the 50 percent local pipe wall defect depth does not affect the global failure strength since its 0.049 square inch area is insufficient to locally reduce the apparent strength of the surrounding (thicker) pipe wall section.

Recognize that the NG-18 method is a discrete evaluation given the material conditions applied. The observed field condition is pitting corrosion where damage (material wastage) is highly biased on the bottom of the pit. Thus the eventual probable failure mode⁴ would be continued

¹ Recall that the code strength values are statistical lower bound values determined from numerous mill heats of the designated material specification.

² Per Jaan Taagepera, PE, ETC Senior Engineer, Engineering Analysis Group, who completed the walkdown inspection with Plant staff. Note also that the line is grade-mounted and thus no amplified in-structure seismic loading is applicable.

³ Acknowledgment to CP Hsiao who programmed the MathCad worksheets.

⁴ The NG-18 method was parametrically applied using progressively deeper pitting corrosion with a leak failure mode being predicted. The gross failure case is not deemed credible in light of the margin of three (3) safety factor.

D. M. Bosi – Chevron ETC

T. Lizarraga

Richmond Refinery – Operating Integrity Assessment of the Blending and Shipping Plant 1 Lead Line

September 12, 2008

Page 3

corrosion in the pit resulting in a pin-hole breach of the remaining pit ligament, with consequent leaking. However, the surrounding corroded wall thickness (conservatively approximated as 0.1 inches thickness) would easily sustain the internal pressure loading stably after the pit breach.

The pit and corroded area combination failure capacity results of Table 1 clearly show that no threat of catastrophic failure existed from the as-found corrosion damage condition. All failure pressure magnitudes are commensurate with the approximate three (3) safety factor of the original ASME B31.3 piping design code. Specifically, the line maximum operating pressure is 250 psi and thus the margin against failure is greater than a factor of three (3). Note that the Kastner Method is limiting (i.e the lowest predicted failure pressure).

Table 1 Failure Pressure Predictions for a Pit Isolated in a Thinned Pipe Section

Method	Failure Pressure (psi)	Failure Mode
ASME B31.G	810	NA
RSTRENG (Modified B31.G)	978	
DNV RP-F101	1213	
Shell-92	1059	
PCORRC	1142	
Kastner's Method	757	
NG-18	NA	Global / No Pit Failure

Although the failure pressure threshold of the analyzed defect is high the Plant decision to repair the line prior to a return to service is correct. Note that irrespective of analytical results, the various defect assessment codes, such as ASME-API-579 and B31.G, include guidance to repair metal loss defects below specified limits. ASME-API-579 stipulates 0.1 inches, while ASME B31.G uses a limit of 20 percent of the nominal pipe wall schedule thickness (i.e. 0.047 inches, as compared to a remaining thickness of 0.05 inches in this Blending and Shipping Plant case).

These limits are recommended primarily to assure ruggedness against external hazards such as stepping loads, impact due to dropped tools and other industrial hazards. In this case, the 0.25 inch diameter target area of the controlling exposed pit is so small that direct impact from such hazards is physically improbable.

Recognize that discovery of such metal loss defects, during operation, which are below recommended threshold limits may optionally be evaluated for short-term service integrity by detailed stress analysis methods. This is provided to allow reasonable time for staging of repair materials and craft.

D. M. Bosi – Chevron ETC

T. Lizarraga

Richmond Refinery – Operating Integrity Assessment of the Blending and Shipping Plant 1

Lead Line

September 12, 2008

Page 4

Please call me if you have any questions or concerns.



D. M. Bosi, P. E.,

State of California

Staff Consulting Engineer

Distribution List:

R. Basco

J. Buchanan

K. Gish

CP Hsiao

D. Mason

M. Robinson

P. Sarmicanic

J. Taagepera

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EPA

T. Lizarraga

Richmond Refinery – Operating Integrity Assessment of the Blending and Shipping Plant 1

Lead Line

September 12, 2008

Page 5

Appendix 1

MathCad Burst Pressure Worksheets

(5 sheets follow)

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T. A. Lizarraga
Manager

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Tel 510 242 1400
Fax 510 242 5353
hink@chevron.com

August 28, 2008

Ms. Carla Fritz
Cal OSHA Compliance Engineer
Department of Industrial Relations
Northern California Process Safety Management
1450 Enea Circle, Suite 550
Concord, CA 94520

Cal OSHA Document Request Regarding TEL Facility Investigation

Dear Ms. Fritz

In response to Item #7 in your amended Document Request dated 8/18/08 (copy attached), please find attached our Inspection Recommendation #1621-03-03-27. This concerns an inspection of the #1 Lead Line which is used to circulate gasoline blend stock from the leaded gasoline tank down to the TEL storage and blend station and back to the tank. TEL is injected into this circulation line and mixed with the gasoline in the tank in order to properly blend aviation gasoline. This inspection report is dated 3/27/03 and includes a recommendation to replace approximately 700 feet of line due to internal and external corrosion. We were unable to find an inspection report dated 6/29/07. We believe that the 6/29/07 date mentioned in our PHA for the TEL Blending Facility was either a typographical error and/or may have been confused with the date of an MOC which was written on 6/21/07 to bypass the TEL storage drum and build a new temporary TEL blending manifold.

A subsequent Fitness for Service review was completed which concluded that the #1 Lead Line continues to be safe to operate. The existing piping will be replaced with an entirely new line as part of a project to build a new TEL unloading and blending facility which is scheduled for completion in February 2009.

For questions, please contact Mr. Mark Robinson at (510) 242-2233.

Sincerely,
Original Signed By
Mark Robinson

T. A. Lizarraga

Attachments

Recipient Name
Company Name
August 1, 2005
Page 2

cc: J Buchanan
M Robinson
M Brennan
P Canzius

DEPARTMENT OF INDUSTRIAL RELATIONS
Division of Occupational Safety and Health
No. CA Process Safety Management
1450 Enea Circle, Suite 550
Concord, CA 94520
Ph.: (925) 602-2665
Fax: (925) 602-2668



www.dir.ca.gov
cfritz@dir.ca.gov

[via email to: sarmipn@chevron.com](mailto:sarmipn@chevron.com)

08/13/08

DOCUMENT REQUEST

(Amended 08/18/08)

TO: Mark Robinson, Safety Team Lead
Chevron Products Co.

VIA: Peter Sarmicanic, Field Safety Coordinator

FROM: Carla Fritz
Cal OSHA Compliance Engineer

SUBJ: Document Request 2 re: Complaint of Unsafe Working Conditions
Tetraethyl Lead Work Practices – Blending & Shipping

Thank you for providing the previously requested documents. My review of those documents has generated an additional request. Please provide the following documents postmarked no later than 08/24/08.

- 1) Disposition of all recommendations generated pursuant to the PHA's for the *Temporary TEL Blending Facility*
- 2) MOC # 17470 training date(s) & duration
- 3) Disposition of Inspection Recommendation W/R 28096720 (06/05) to replace A-Drum nozzle N-3
- 4) Any & all recommendations generated pursuant to 6/05 identification of A-Drum "severely corroded" outlet piping & external corrosion "in all nozzles"
- 5) Any & all inspection records generated pursuant to discovery of A-Drum nozzle leak & subsequent repair
- 6) Any & all current monitoring data conducted during the revised TEL offload/blending procedure
- 7) Inspection report of 06/29/07 for 1-Lead line ("replace 700 ft")

Thank you in advance for your continued cooperation in this investigation.

Carla Fritz

No. CA Process Safety Management
(925) 602-5779 (925) 602-2668 (fax)

Ref: 311070239



INSPECTION RECOMMENDATION

Fixed Equip. Reliability
Equipment Reliability Group
Richmond Refinery, Richmond CA

I. RECO IDENTIFICATION:

RECO #:	1621-03-03-27--#1 Lead Line	PPT #:	28110507	Date Written:	3/27/03
Plant:	Lwr. Main Tank Field	PRIORITY	RECO TYPE	MAINT. ZONE	
Plt. Eq. #:	1621-002-011	<input type="checkbox"/> Immediate Action	<input type="checkbox"/> Information Only	<input type="checkbox"/> Cracking	
Brass Tag#:		<input checked="" type="checkbox"/> Planned Shutdown	<input checked="" type="checkbox"/> Eng. Required	<input type="checkbox"/> Hydro	
		<input type="checkbox"/> Next Opportunity	<input type="checkbox"/> Eng. Not Req'd	<input type="checkbox"/> D&R	
		<input type="checkbox"/> Routine	<input type="checkbox"/> Other	<input checked="" type="checkbox"/> B & S	
Service:	Avgas W/Lead, Dye & Additive				

II. MANAGEMENT OF CHANGE:

Level 1 Review Summary	
<input type="checkbox"/> NO	Will new feeds, chemicals or catalysts be used? (See RI-313 for new chemicals, Oprs. Coord for new feeds)
<input type="checkbox"/> NO	Will this work lead to operation outside established limits? Which Equipment? List Equipment if Yes
<input type="checkbox"/> NO	Is this repair or replacement other than "In-kind"?
<input type="checkbox"/> NO	Does this involve developing new and / or modifying existing procedure?
<input type="checkbox"/> NO	Does this work involve the addition of new equipment? (Send copy of the MOC form to EAD for new equipment)
<input type="checkbox"/> NO	Will this impact upstream or downstream plants? If "YES" ... then which Plants? List Plant(s) if Yes
If any of the above questions were answered "YES", then a Level 2 review is required.	

III. RECO INFORMATION (Summary and Details):

#1 Lead Line Inspection Results. REC-55216					
Information					
<p>The #1 Lead Line was visually inspected and UT gauged for wall thickness per the API-570 10 year requirement. The line is corroding internally & externally. Numerous failed pipe supports were found from below T-3075 over to the Ethyl Mix Building on Standard Rd. approx. 1300 feet: Recommend installing new pipe supports. Due to the failed supports the line has been setting in soil & water causing the external corrosion. The combination of external corrosion and internal corrosion has left an average wall thickness of 0.05 in. (internal & external corrosion) to 0.20 in. (internal corrosion) (throwaway thickness is 0.10 in.) on the bottom side of the line (High probability of failures). Replacement of approx. 800 feet of the pipe is required in several locations. A section of the line is buried under Standard Rd. The condition of the line in this area is unknown: Excavation is required for inspection. Several dead legs, un-reinforced branch connections & mitered joints were also found. It is Inspections recommendation that this line be replaced from the tank to the Ethyl Plant and the pipe schedule be increased to heavy wall. The 3" branch to the dye mix building is corroding under the failed paint, recommend cleaning and re-coating the line. UPDATE 8-28-06; THE DAY LIGHTING & LIFTING OF THE LINE (RECO'S 1 & 2) WERE COMPLETED. ADDITIONAL PIPE REPLACEMENT & AND CLEANING & COATING ARE REQUIRED. REPLACED WORK ORDER #26146385 WITH A NEW WORK REQUEST.</p>					
Cost Estimate by:	Total Man-Days	Cost per Man-Day	Total Labor Cost:	Total M'trl. Cost:	Total Cost:
Estimator					

IV. RECO APPROVAL (Enter Name & Phone):

Area Inspector:	Name	Phone	Engineering:	Name	Phone
	Shirley Tyree	2-2724		Albert Carrillo	2-2172
Lead Inspector:	Name	Phone	Operations:	Name	Phone
	Dan Mason	2-3287		Marshall Miller	2-4002



INSPECTION RECOMMENDATION

Fixed Equip. Reliability
Equipment Reliability Group
Richmond Refinery, Richmond CA

I. RECO IDENTIFICATION (PAGE 2):

RECO #: 1621-03-03-27--#1 Lead Line

PPT #: 28110507

Date Written: 3/27/03

III. RECO INFORMATION (PAGE 2):

#	Information / Recommendations
	<u>Required Work</u>
	6) Replace approx. 800 ft. of corroded pipe in several locations per ABO pipe class.
	7) Clean & coat several locations per spec. 1.8. Contact inspection after cleaning the line.
	8) Excavate or replace per ABO pipe class one buried location.
	1) COMPLETE: Day light to remove foliage and soil in seven locations, remove one failed rubber sleeve seal to complete inspection.
	2) COMPLETE: Lift the line and block it up for inspection in one location.
	3) COMPLETE: Repair one leaking fitting.
	<u>Recommended Work</u>
	4) Install supports as needed in three locations.
	5) Install reinforcement on two branch connections. Install elbows on two un-reinforced branch connections and eliminate two associated dead legs per ABO pipe class.

Request Date : 08/28/06 Time : 06:34 WORK REQUEST
Originator : TYREE S 28110507
Facility : RI Unit: 1621 Orig Dept: CNTR PRINTED: 08/28/06
===== PAGE : 1
Status = ORIG Priority : D
=====

Nuclear-Only Information:

Applicable Mode :
Limiting Condition of Operation (LCO) :

Work Against Information:

Op Sys: Division: 2BT Area: System:
Class : Equip : 222 1621-002 Comp: 222 1621-002-011

Name : #1 LEAD AVGAS LINE
Mfr. : UNKNOWN Model No.: UNKNOWN
Serial : UNK-1621-002-011 UTC No. : 1002026649
PEG : Equip Tag : 1002026649
Eq Alt Tag:
Location : #1 LEAD AVGAS LINE
Client/Act:
Reg Unit : Reg Comp :
Defect/Request: #1 LEAD LINE INSPECTION RESULTS

Deficiency Tag/Locn: _____
=====

Work Request Details:

Planning Ctr: Planner : Unit Cond Rq:
Need Date : 09/18/06 Project : Discipline:
Failure Date: Outage : Trbl/Brkdown: N
Train : Ops Review:
=====

Detailed Explanation :

REC-55216 NEED DATE = DESIRED DATE.

REFERENCE DOC. 1621-03-03-27--#1 LEAD LINE

REQUIRED WORK

6) REPLACE APPROX. 800 FT. OF CORRODED PIPE IN
SEVERAL LOCATIONS PER ABO PIPE CLASS.

7) CLEAN & COAT SEVERAL LOCATIONS PER SPEC. 1.8
CONTACT INSPECTION AFTER CLEANING THE LINE.

8) EXCAVATE OR REPLACE PER ABO PIPE CLASS ONE
BURIED LOCATION.

RECO'S 1, 2, & 3 ARE COMPLETE.

RECOMMENDED WORK

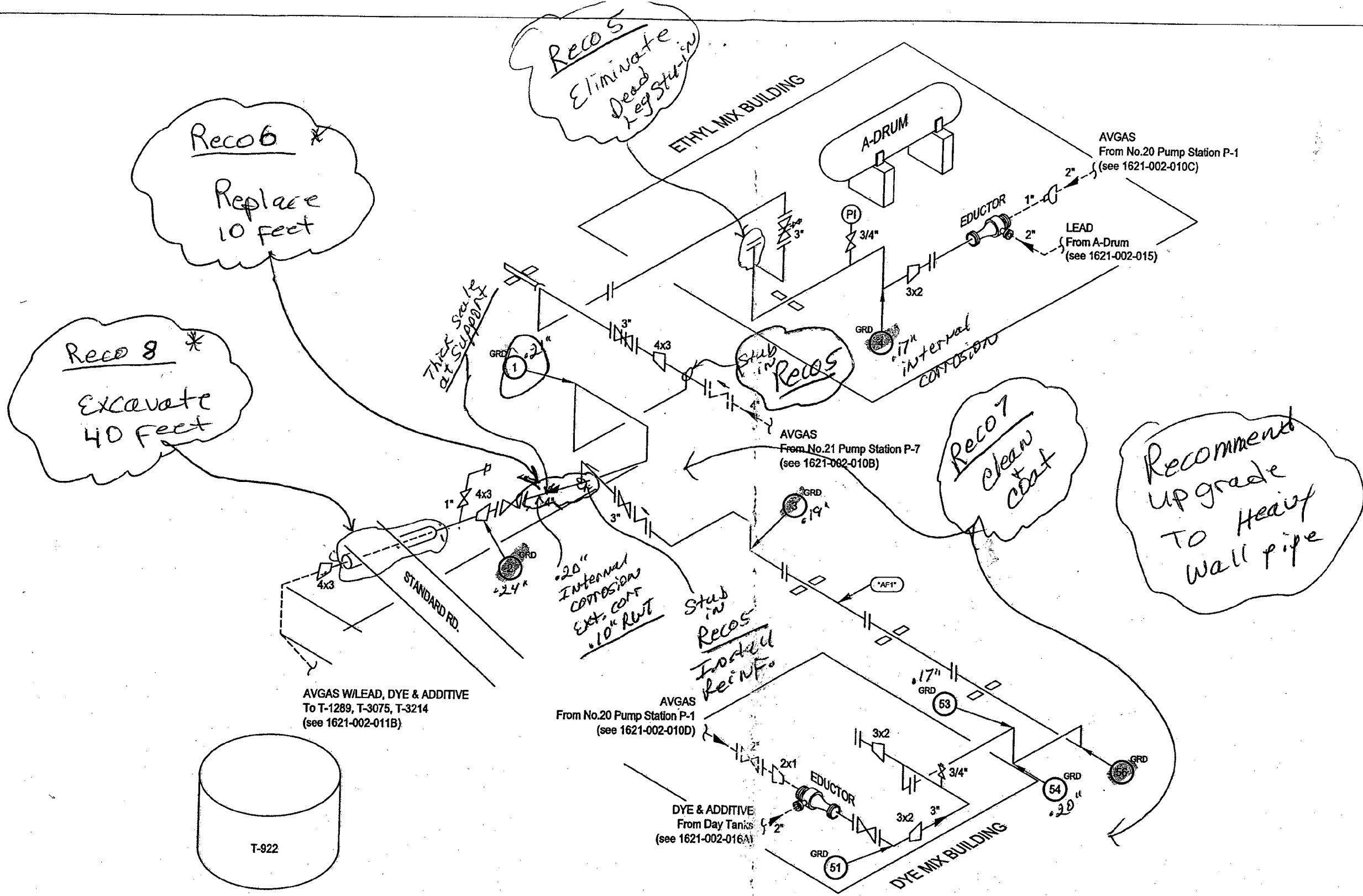
4) INSTALL SUPPORTS AS NEEDED IN THREE LOCATIONS.

5) INSTALL REINFORCEMENT ON TWO BRANCH CONNECTIONS.

Request Date : 08/28/06 Time : 06:34 WORK REQUEST
Originator : TYREE S 28110507
Facility : RI Unit: 1621 Orig Dept: CNTR PRINTED: 08/28/06
===== PAGE : 2
Status = ORIG Priority : D
=====

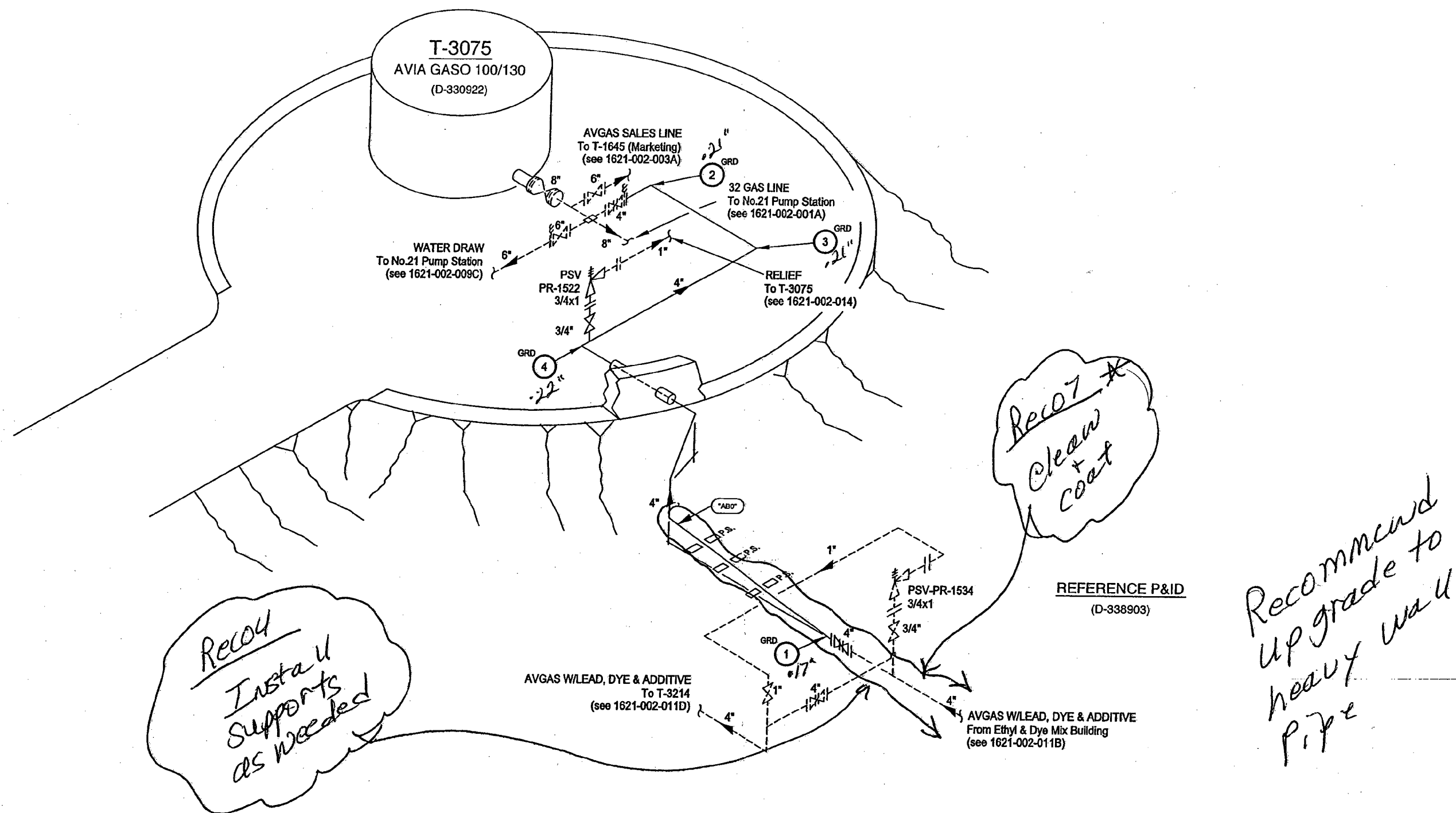
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Approved By : Date : Time :

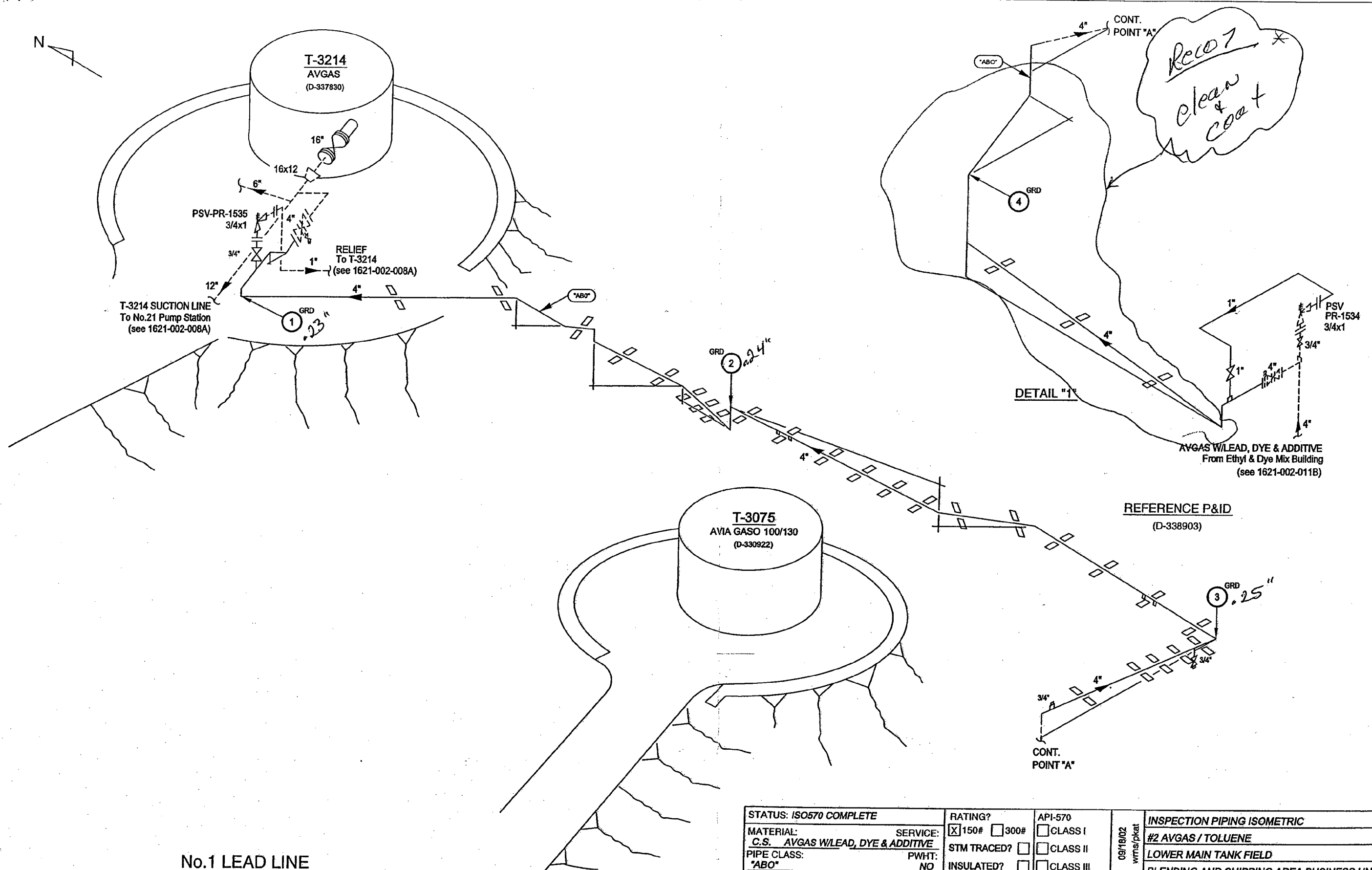


No.1 LEAD LINE

STATUS: ISO570 COMPLETE		RATING? <input type="checkbox"/> 150# <input checked="" type="checkbox"/> 300#		API-570 <input type="checkbox"/> CLASS I		9/14/05 mhee	INSPECTION PIPING ISOMETRIC			
MATERIAL: C.S.		SERVICE: AVGAS		<input type="checkbox"/> CLASS II			#2 AVGAS / TOLUENE			
PIPE CLASS: "AF1"		PWHT: NO		<input type="checkbox"/> CLASS III			LOWER MAIN TANK FIELD			
LINE NAME: No.1 LEAD LINE							BLENDING AND SHIPPING AREA BUSINESS UNIT			
FROM: ETHYL & DYE MIX BUILDINGS						Z	1621-002-011A		REV	SHT
TO: VICINITY OF STANDARD & T-922										
								3	1	



STATUS: <u>ISO570 COMPLETE</u>		RATING?		API-570	08/18/02 wrns/pkwt	INSPECTION PIPING ISOMETRIC	
MATERIAL: <u>C.S. AVGAS W/LEAD, DYE & ADDITIVE</u>		<input checked="" type="checkbox"/> 150# <input type="checkbox"/> 300#		<input type="checkbox"/> CLASS I		#2 AVGAS / TOLUENE	
PIPE CLASS: <u>ABO</u>		STM TRACED? <input type="checkbox"/>		<input type="checkbox"/> CLASS II		LOWER MAIN TANK FIELD	
PWHT: <u>NO</u>		INSULATED? <input type="checkbox"/>		<input type="checkbox"/> CLASS III		BLENDING AND SHIPPING AREA BUSINESS UNIT	
LINE NAME: <u>No.1 LEAD LINE</u>					Z	1621-002-011C	
FROM: <u>SLEEPERWAY BELOW T-3075</u>							
TO: <u>T-3075</u>							
						REV	SH
						1	1



No.1 LEAD LINE

REFERENCE P&ID
(D-338903)

STATUS: ISO570 COMPLETE		RATING?		API-570		INSPECTION PIPING ISOMETRIC	
MATERIAL: SERVICE:		<input checked="" type="checkbox"/> 150# <input type="checkbox"/> 300#		<input type="checkbox"/> CLASS I		#2 AVGAS / TOLUENE	
C.S. AVGAS W/LEAD, DYE & ADDITIVE		STM TRACED? <input type="checkbox"/>		<input type="checkbox"/> CLASS II		LOWER MAIN TANK FIELD	
PIPE CLASS: PWHT:		INSULATED? <input type="checkbox"/>		<input type="checkbox"/> CLASS III		BLENDING AND SHIPPING AREA BUSINESS UNIT	
"ABO"							
LINE NAME: No.1 LEAD LINE						Z	1621-002-011D
FROM: SLEEPERWAY BELOW T-3075							
TO: T-3214							
						REV	SHT
						1	1

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T. A. Lizarraga
Manager

Health, Environment & Safety
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August 22, 2008

Ms. Carla Fritz
Cal OSHA Compliance Engineer
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1450 Enea Circle, Suite 550
Concord, CA 94520

Cal OSHA Document Request #2 Regarding TEL Facility Investigation

Dear Ms. Fritz:

Please find the attached documents satisfying Cal OSHA's original Document Request dated 8/13/2008 related to the complaint of alleged unsafe working conditions at our tetraethyl lead (TEL) Unloading Facility. The responses below address your questions seriatim. The first page of each document is identified with the corresponding item number.

Per your 8/22/08 email to Peter Sarmicanic, a postmark deadline extension until Friday, August 29, 2008 for Item #7, included in the amended document request letter dated 8/18/08 (copy attached), was granted. Documents satisfying Item #7 will be sent separately next week.

- 1) Disposition of all recommendations generated pursuant to the PHA's for the *Temporary TEL Blending Facility*
 - a. Disposition of recommendations are included in Attachment 1, PHA Recommendation Tables.
- 2) Stage 2 Training & Communication Review section of MOC # 17470
 - a. The MOC was updated to reflect the training date(s) and duration.
- 3) Disposition of Inspection Recommendation W/R 28096720 (06/05) to replace A-Drum nozzle N-3
 - a. Inspection Reco – 6-23-05

b. Disposition:

- The immediate response included increasing monitoring of the N-3 nozzle thickness to a quarterly frequency with instructions from ABU management to take the vessel out of service immediately if the nozzle reached the minimum allowable thickness, consistent with the Refinery's Safety Tenets. These inspections showed nozzle thicknesses above the minimum allowable thickness while the vessel remained in operation.
- Scoping for the nozzle replacement began immediately. Options considered included replacing the nozzle, replacing the vessel and permanently taking the system out of service and exiting the aviation gasoline (AvGas) business. Chevron currently supplies about 75% of all aviation gasoline used in California.
- In August 2006 a Senior Engineer performed calculations that supported a fitness for service approach and determined the N-3 nozzle minimum allowable thickness to be 0.10 inch.
- Replacing the nozzle on the existing vessel was not feasible due to vessel design (internal coating) and safety concerns related to repairing a vessel that could not be cleaned properly for repairs. A decision was made to install a temporary TEL injection system for use while a new AvGas plant was designed and constructed, which included taking A-drum out of service.
- In June 2007 when the nozzle spool failed, a temporary leak repair was made using a composite wrap to allow the drum level to be lowered to minimum level. The drum was then isolated from service until it could be removed during the cut-over of the new TEL off-loading facilities, scheduled for 1st Quarter 2009. At this point the Richmond Refinery stopped blending avgas until the temporary TEL off-loading system was placed in serviced 10/31/07.

4) All recommendations generated pursuant to the 6/05 identification of A-Drum "severely corroded" outlet piping & external corrosion "in all nozzles"

- a. EWO B05-15, dated 8/1/05
- b. Inspection Reco – 6-20-07
- c. Description:
 - Operations elected to replace all of the overhead pipe per EWO B05-015.
 - The 6/20/07 Inspection Recommendation was for a failed nozzle spool that had not been identified or tracked as part of A-Drum nozzles or piping. The spool is shown on the drawing attached to this recommendation and it is not shown on the drawing attached to the 6/23/05 recommendation. This nozzle spool is flanged to the vessel and the outlet piping and extends into the vessel, nearly to the bottom, as a

Ms. Carla Fritz
Department of Industrial Relations
Northern California Process Safety Management
August 22, 2008
Page 3

“Dip Pipe”. The small spool was temporarily repaired with a composite wrap.

- 5) All inspection records generated pursuant to the discovery of A-Drum nozzle leak and subsequent repair
 - a. History Brief – A-Drum
 - b. RT Exam Records – 9/2007 to 8/2008
 - c. Description:
 - The A-Drum nozzle leak referenced in the Document Request, was not in fact a nozzle leak, but instead a small spool leak as described above. The History Brief regarding the A-drum nozzle inspections and the inspection records are attached as requested, although the nozzle did not leak.
- 6) Personal air monitoring results for TEL conducted during the revised TEL offload/blending procedure, “Detailed Air Monitoring Results by Substance and Employee – Chevron Custom Report”
- 7) Inspection report of 06/29/07 for the 1-Lead line (“replace 700 ft”)
 - a. Documents satisfying Item #7 will be sent separately next week.

If you have any questions, please contact Mr. Mark Robinson of my staff at (510) 242-2233.

Sincerely,

Original Signed By
Richard Quiroz

T. A. Lizarraga

Attachments

bcc: MRobinson
JBuchanan
RBasco
MBrennan
PCanzius

RQP

DEPARTMENT OF INDUSTRIAL RELATIONS
Division of Occupational Safety and Health
No. CA Process Safety Management
1450 Enea Circle, Suite 550
Concord, CA 94520
Ph.: (925) 602-2665
Fax.: (925) 602-2668



www.dir.ca.gov
cfritz@dir.ca.gov

via email to: sarmipn@chevron.com

08/13/08

DOCUMENT REQUEST

(Amended 08/18/08)

TO: Mark Robinson, Safety Team Lead
Chevron Products Co.

VIA: Peter Sarmicanic, Field Safety Coordinator

FROM: Carla Fritz
Cal OSHA Compliance Engineer

SUBJ: Document Request 2 re: Complaint of Unsafe Working Conditions
Tetraethyl Lead Work Practices – Blending & Shipping

Thank you for providing the previously requested documents. My review of those documents has generated an additional request. Please provide the following documents postmarked no later than 08/24/08.

- 1) Disposition of all recommendations generated pursuant to the PHA's for the *Temporary TEL Blending Facility*
- 2) MOC # 17470 training date(s) & duration
- 3) Disposition of Inspection Recommendation W/R 28096720 (06/05) to replace A-Drum nozzle N-3
- 4) Any & all recommendations generated pursuant to 6/05 identification of A-Drum "severely corroded" outlet piping & external corrosion "in all nozzles"
- 5) Any & all inspection records generated pursuant to discovery of A-Drum nozzle leak & subsequent repair
- 6) Any & all current monitoring data conducted during the revised TEL offload/blending procedure
- 7) Inspection report of 06/29/07 for 1-Lead line ("replace 700 ft")

Thank you in advance for your continued cooperation in this investigation.

Carla Fritz

No. CA Process Safety Management
(925) 602-5779 (925) 602-2668 (fax)

Ref: 311070239

Recommendations

Recommendations	Max RR	Place(s) Used	Disposition
1. Include step in beginning of procedure to prepare Ethylation Report document for HO signature	7	Consequences: 1.1.1.1	There was already a step in the procedure stating, "Sign and approve Aviation Ethylation Report." RHO (Refined Head Operator)
2. Add step in procedure to start mixer or confirm that the mixer is running	6	Consequences: 2.9.1.1	There was already a step in the Avgas Blending procedure to turn the mixers on. Therefore the mixers will already be running and confirmed when operator is adding the lead.
3. Consider adding a step to have the HO verify that the railcar is properly grounded, secured and properly isolated for offloading.	6	Consequences: 8.1.1.1, 8.9.1.1, 9.9.1.1	Prior to commissioning and starting up the temporary facility, a step was added to the procedure for the RHO to visually inspect, ground, and release 50 track and railcar for offloading.
4. Add a step to inspect the ramp for damage before lowering onto railcar.	10	Consequences: 11.9.1.1	Prior to commissioning and starting up the temporary facility, a step was added to the procedure to inspect the ramp for safe operation.
5. Add a step to bring tools and bucket of kerosene to the top of the railcar.	8	Consequences: 12.9.1.1	Having tools and kerosene is part of the normal job duties for connecting the loading arm, and therefore is not a separate procedural step.
6. Add sub-step to this one with details for shutting down P-7.	9	Consequences: 24.9.1.1	An existing Job Aid and training already address the operation of pump P-7.

Recommendations

Recommendations	Max HRR	Place(s) Used	Disposition
1. Concern is the possible impact of a fire involving the A-drum if a significant leak develops in the area of Standard Road just above the TEL shed. Consider removing the A-drum prior to starting up the new temporary ethylizing system.	5	Consequences: 1.14.1.1	It was determined that the safest way to remove the TEL drum would be to integrate its removal with the installation of the new TEL loading facility. Having the new facility in place will affect the safest conversion and cutover. The TEL drum was put into a safe posture by pumping it down to a minimal level and preserving a liquid layer over the bottom, in preparation for removal during 1Q 2009.
2. Install labels for the modified facility when the changes have been made.		Consequences: 1.17.1.1	Labels were installed prior to start-up and commissioning.
3. Concern is that P-7 is circulated for 2 hours with no operator attendance and the Seal could fail if the suction valve at the tank were closed. The tank valves are controlled by a different operator and there is no alarm or shutdown device to alert the operator or protect the pump. Add a step in the blending procedure to lock T-3214 valves open and tag. Blend in Progress while blending aviation gasoline or install some type of alarm to alert the operators.	5	Consequences: 1.1.1.1	Step #12 in the off-loading checklist states, "Ensure T-3214 is set to circulate via T-3214 fill and the 1 lead." This covers the operator going out and checking. This is consistent with the Refinery's normal blending procedures, and is accepted industry practice.
4. Concern is the potential failure of the hose during a gas wash leading to a fire involving the A-Drum. A. Consider routine periodic replacement of hoses. B. Consider redesigning hose arrangement to reduce possibility of failure. C. Investigate the possibility of replacing hoses with a more robust method of connecting to the rail car. D. Consider additional fire protection for the rail car spot.	6	Consequences: 4.14.1.1, 4.14.2.1	A) The Refinery's existing procedures require annual replacement of hoses. B&C) The current loading arm arrangement didn't lend itself to significant design changes. Engineering and maintenance were consulted to improve operability. As a result, the counterweights and pulley were changed to make the arm slide easier. Operability considerations were designed into the new facility, which incorporates these features. D) The Refinery's Fire Department reviewed the area with respect to the piping changes. Existing fire monitors were supplemented with additional dry chemical fire extinguishers.
5. Concern is that the TEL skid drains to the sump under A-Drum which would direct any fire to a more hazardous location. Consider isolating the TEL skid sump from the A-Drum sump.	6	Consequences: 4.14.3.1	The piping changes did not increase the likelihood for more leaks, and therefore did not necessitate a modification to the area drainage pattern. Design considerations for environmental compliance require water runoff to be contained for testing prior to discharge to the Refinery's effluent system.
6. Concern is the possible impact of a fire involving the A-drum from an argon leak under the road above the lead building. A. Consider removing the A-drum prior to starting up the new ethylizing system. B. Consider rerouting or replacing the 1 Lead line prior to starting up the temporary TEL facility.	5	Consequences: 1.1.3.1	A) See item (1) concerning the removal of the TEL A-drum. B) The line is wrapped and sleeved where it crosses under the roadway. The replacement and re-routing of the line is included as part of the new facility, which will be completed during 1Q 2009.

Stage Two Training and Communication Review

8/21/2008 4:37:50 PM

MOC No: 17470

Date Completed: 10/25/2007

Completed By: Prather, Seth A.

Person Responsible: Prather, Seth A.

Project/Equipment Title:

T&B / Ethyl Plant /Tetra Ethyl Lead Injection System

Summary of Review:

Tetraethyl lead is stored in 'A' Drum located in the ethyl plant, behind the D&R offices. This vessel is approaching end of life, and will no longer be used to store TEL for the purpose of blending aviation gasoline. A new TEL injection system has been designed to bypass 'A' drum and inject TEL from a railcar directly into the avgas blend circulation stream. The scope of this project includes: fabrication & installation of a new vacuum eductor system, identification of tie-in locations, and guidance for required structural steel. Please review the EOM for new procedures, checklists, routine duties and drawings. Operation of the Lead skid constitutes a fundamental change in the way Tetraethyl lead is introduced into the blend tank by removing the need for a weigh tank. All qualified MTF personnel will receive training on setup and operation prior to being released to operate the new facility.

Update added on 8-20-08:

The training was instructor-lead and was performed in the field by a qualified trainer using the updated off-loading procedure. The training took about 2 hours and all operators qualified on the MTF job were trained. No one was allowed to perform the new off-loading procedure until they were trained.

Training was performed on a individual basis from 9/27/07 through 10/24/07. A signed attendance list is available from the Development Dept.

☒ Identify the affected employees.

- * Maintenance and Technical affected?
- * Employee who will require training to start up the change based on the level of training.
- * Employees who will receive training after the start up BUT before they can perform work affected by the change

☒ Procedures have been modified/written (Ops/SSO/Trainer)

☒ Identify the affected employees..

- * Lesson plan cover sheet (includes training objective statement and list of affected employees)
- * Procedural changes (Standing Orders, mark-ups)
- * Flow daigrams (final or mark-ups)

☒ Determine level of training

☒ Training has been scheduled

☒ Affected employees have been trained in order to start up the change.



INSPECTION RECOMMENDATION

Fixed Equip. Reliability
Equipment Reliability Group
Richmond Refinery, Richmond CA

I. RECO IDENTIFICATION:

RECO #:	A-DrumInsp.-06-05	W/R #:	28096720	Date Written:	6/23/05
Plant:	Ethyl Plant	PRIORITY	RECO TYPE	MAINT. ZONE	
Plt. Eqp. #:	A-Drum	<input type="checkbox"/> Immediate Action	<input type="checkbox"/> Information Only	<input type="checkbox"/> Utilities	
Brass Tag#:		<input type="checkbox"/> Planned Shutdown	<input checked="" type="checkbox"/> Eng. Required	<input type="checkbox"/> Hydro	
		<input checked="" type="checkbox"/> Next Opportunity	<input type="checkbox"/> Eng. Not Req'd	<input type="checkbox"/> D&R	
		<input type="checkbox"/> Routine	<input type="checkbox"/> Other _____	<input checked="" type="checkbox"/> B & S _____	
Service:	Lead (TEL)				

II. MANAGEMENT OF CHANGE:

Level 1 Review Summary

☐ NO Will new feeds, chemicals or catalysts be used? (See RI-313 for new chemicals, Oprs. Coord for new feeds)

☐ NO Will this work lead to operation outside established limits? Which Equipment? List Equipment if Yes

☐ NO Is this repair or replacement other than "In-kind" ?

☐ NO Does this involve developing new and / or modifying existing procedure?

☐ NO Does this work involve the addition of new equipment? (Send copy of the MOC form to EAD for new equipment)

☐ NO Will this impact upstream or downstream plants? If "YES" ... then which Plants? List Plant (s) if Yes

If any of the above questions were answered "YES", then a Level 2 review is required.

III. RECO INFORMATION (Summary and Details):

A-Drum External In Lieu Inspection Results. REC-44234					
Information					
<p><i>The A-Drum was visually inspected & UT scanned. There was no change in the shell wall thickness since the last inspection in 1994. The 18" manway (M1) was UT scanned and found to have a wall thickness of 1.62".</i></p> <p><i>Nozzle #N-2 (6") was radiographed and a wall thickness of 0.43" was found. Nozzle #N-3 (2") was radiographed and has moderate to severe internal corrosion a wall thickness of 0.14" (T-Min is 0.135), replacement is required. The outlet piping is also severely corroded. The radiograph for N-4 (6") revealed the 2" pipe coming off of it also goes through the 6" nozzle into the vessel. The wall thickness for the 6" is 0.47"; the thickness for the 2" is 0.22". The radiographs revealed external corrosion in all the nozzles. The following is a list of required and recommended repairs.</i></p> <p>Required Work:</p> <p><i>1) Replace nozzle N-3 per Engineering specs.</i></p> <p><i>All hot work in this Inspection Recommendation is subject to the "Richmond Refinery - Metal Craft Quality Assurance Procedures Manual;</i></p>					
Cost Estimate by:	Total Man-Days	Cost per Man-Day	Total Labor Cost:	Total M'trl. Cost:	Total Cost:
Estimator			= 	+ 	=

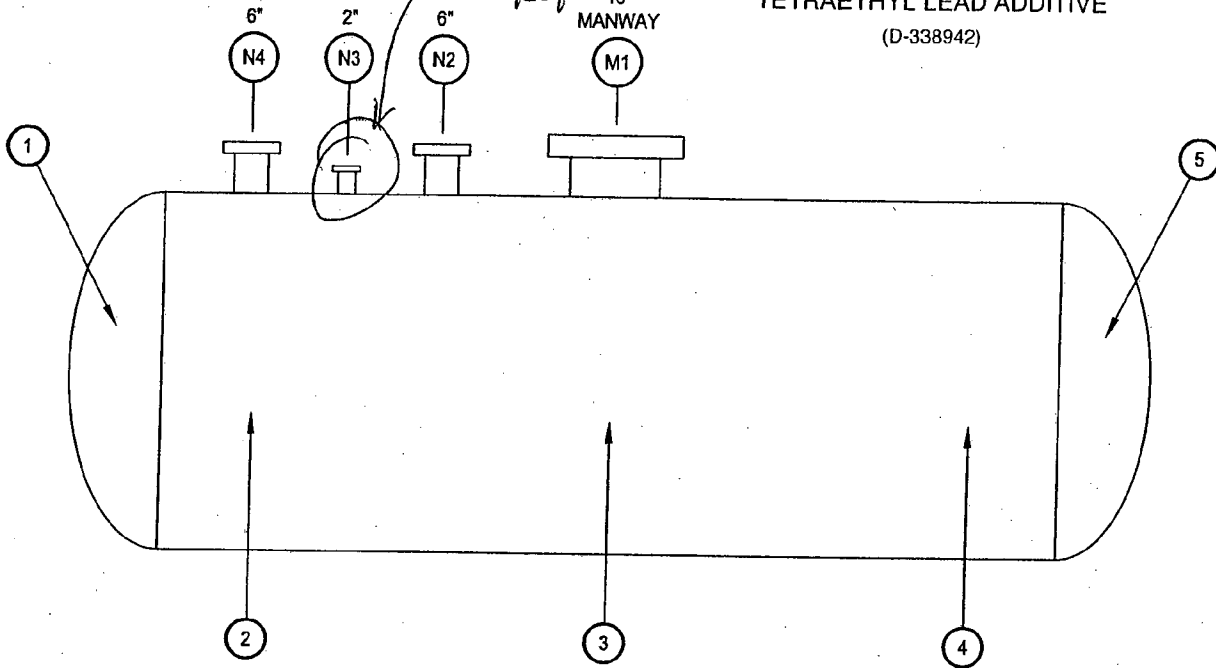
IV. RECO APPROVAL (Enter Name & Phone):

Area Inspector:	Name Shirley Tyree	Phone 2-2724	Engineering:	Name Noer Ibrahim	Phone 2-2508
Lead Inspector:	Name Dan Mason	Phone 2-3287	Operations:	Name Marshall Miller	Phone 2-4002

*Rec'd
Replace nozzle
w-3*

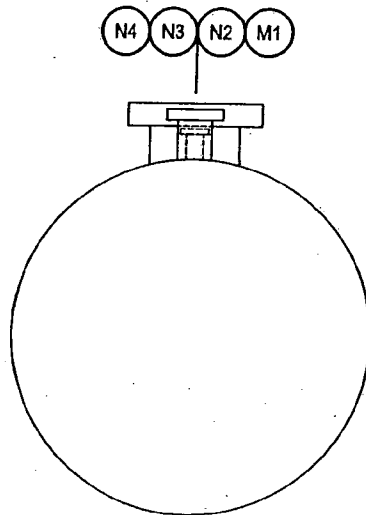
A-DRUM

TETRAETHYL LEAD ADDITIVE
(D-338942)



ELEVATION VIEW

LOOKING NORTH



END VIEW

LOOKING EAST

STATUS: ISO570 COMPLETE

INSULATED? ☐

EQUIPMENT NO: A-DRUM

EQUIPMENT SERVICE: TETRAETHYL LEAD LIQUID

EQUIPMENT ID: D-7143

INSPECTION EQUIPMENT DRAWING

TETRAETHYL LEAD ADDITIVE

#20 PUMP STATION

BLENDING AND SHIPPING AREA BUSINESS UNIT

12/17/04
mhee

Z

1615-A-DRUM

REV SHT

1 1

3) a.



History Brief

For Location ID: 1621-002-015

Report Date: May 31, 2006

Data Source: Meridium

Brief Data:

Date Not Available:	8/1/2005	Date Available:	08/01/2005
History Brief Date:	10/06/2005	History Brief ID:	VI-0510135793
Event Type:	Repair	In- Service Date:	08/01/2005
Equipment ID:	1621-002-015	Critical:	3
Asset ID:	1002026653	Reference Material:	
Work Order Nbr:		Incident Event ID:	
History Type:	FXD	Inspection Date:	08/01/2005
Asset Type:	222	Inspection Type:	
Cost Center:	RRI00371		
Unit:	1621 - LOWER MAIN TANK FIELD		
Headline:	Replaced Internally Corroded Pipe.		

Reliability Analysis:

Event Type:	Repair	Worked Performed By:	Chevron - General
Cause Category:	Information	Program Status:	
Effect Category:	Corrosion	Maintainable Item:	Pipe
Repair Location:		Permanent Repair WO:	
Temporary Repair:		Name:	STYR
Save:		Inspected By:	STYR

Findings:

<u>PCA ID:</u>	<u>Condition:</u>
<u>Inspectable:</u>	<u>Action:</u>
<u>Sub Item:</u>	<u>Location:</u>
<u>Part:</u>	<u>Damage Mechanism:</u>
<u>Discussion:</u>	<u>PCA Work Order No :</u>

Reliability Comments:

The radiographs of the A-Drum nozzles (performed as part of the vessel inspection) found internal corrosion. The inspection was expanded to include the piping coming off of the vessel. The piping had corroded to 0.04" in one location & 0.08 in one other location. Inspection REC-36738 (see 1621-002-010 for inspection REC) was up-dated 7/20/05 to replace the line in five locations. Operations elected to replace all of the over head pipe per B&S EWO B05-015 on 8/1/05.

4) a.

B & S EWO#:		B05-015		REV:		0	
PLANT: #2 Avgas at Ethyl Bldg				SAP COST CENTER: DWRRI-00371			
W/O #:			Project #:			ITEM:	
EQUIP. NO. OR DESCRIPTION:		Replace and modify sections of 2"-Avgas Line at the Ethyl Mix Building <i>Includes the 3" pipe</i>					
MOC #: 15036							
Level 1 - Management of Change Review							
Will This Change:							
<input type="checkbox"/> Yes		Cause the use of different feeds, chemicals or catalysts?					
<input type="checkbox"/> Yes		Cause the use of different process conditions, instrumentation, Process control or affect upstream/downstream plants?					
<input checked="" type="checkbox"/> Yes		Cause the use of new or modified equipment (which is other than in-kind)					
<input type="checkbox"/> Yes		Equipment siting, building, trailer locations, roads or fire protection?					
<input type="checkbox"/> Yes		Require modifying existing and/or developing new procedures?					
<input type="checkbox"/> Yes		Is this an organizational change that will affect employee emergency response?					
<i>A Level 2 review is required for any "YES" answer.</i>							
SAFETY OPERATOR REQ'D?		IN VOC SERVICE?			IN PLANT WELDING?		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
ENGINEER: Noer Ibrahim		<i>Noer Ibrahim 7/27/05</i>			PHONE: 2-2508		
APPROVALS							
LEAD ENGINEER: <i>Ron Post</i>		Ron Post		DATE: 8/1/05		PHONE: 2-5170	
OPERATIONS: <i>Don Edlinger</i>		Don Edlinger		DATE: 8/1/05		PHONE: 2-2395	
MAINTENANCE: <i>Jeff Lowe</i>		Jeff Lowe		DATE: 8/1/05		PHONE: 2-2258	
<p>See scope of work:</p> <p><i>work complete</i></p>							

CC: D.Edlinger (1), Jeff Lowe (3), S.Tyree (1), Noer Ibrahim (1+ Original)

Remember Safety or be Remembered!

4) b.

SUMMARY

The Ethyl Mix Plant Lines were visually inspected from The Vent Seal (D-526) and the A-Drum (Ethyl Plant), Off Loading Line and Circulation Line per the API-570 ten year Inspection requirements. Radiographs were taken in several locations. The 2 inch pipe is corroding internally at 0.15 inch wall, 0.05 inch pitting, 0.10 inch RWT, throwaway at 0.10 inch, replacement is required.

SCOPE OF WORK

- Remove/replace 2 inch line identified on Iso.#1622-001-015.
- Use 2"- Sch.80 CS Pipe, the rest of piping material refer to Pipe Class AB0.
- New pipe shall be shop fab., hydro tested to 450 Psig and on site before job is scheduled.
- 5% Random Butt weld.
- Chevron to provide all staging as required.
- **PRIOR TO COMMENCE WORK, ALL PERSONNEL ENTERING THE JOB SITE ARE REQUIRED TO WEAR PPE.**

Existing pipe removal guidelines

- Joint Job Site Visit is mandatory with Ops. prior to starting work.
- All piping system are very corroded internally and full of scale.
- Upon removal of existing pipe, immediately tape off both ends with plastic and duct tape. All existing pipe will be placed in "**Drums**". This will require all pieces of pipe to be no more than 31 inches long after taping. Ops. will mark line with "Cut Tape" prior to cutting.
- Set up decontamination area with 2 swimming pools. Tools can be cleaned using dish soap with a bath of bleach water as last step. Other alternative is to use kerosene/pearl oil as the soap.
- Ethyl plant has a safety shower and a shower in the office room.
- All used PPE will be placed in a drum as Hazardous Waste,

MATERIALS

All piping materials are per piping class AB0.

INSTALLATION AND WELDING REQUIREMENTS

1. All pipe welding shall be done in accordance with ANSI B-31.3, Latest Edition and the Chevron Metals Craft Manual. AF1 NJ
2. Piping construction shall meet Chevron Piping Classification ~~AB0~~ welded.
3. Welding of pressured pipe shall be per Chevron Welding Procedure WPS 10.

INSPECTION REQUIREMENTS

1. Hydro test shall be in accordance with Chevron Procedure PIM-EF-121.
2. Hydro test pressure for Piping Classification to ~~450~~ PSIG.

1125 NJ

Remember Safety or Be Remembered

4) b.

ATTACHED DRAWINGS and OTHER DOCUMENTS

CONSTRUCTION DRAWINGS, SPECIFICATIONS and PROCEDURES	DESCRIPTION / COMMENTS
Dwg. 1621-001-015	Inspection Isometric drawing
Dwg. D-338942	P&ID, Avgas-Lead, Dye and Additive System
Chevron Piping Classification AB0	Pipe construction shall be welded, available on request
Chevron Weld Specification WPS 10	SMAW w/ E-6010/E-7018 for pipe, available upon request
DOCUMENTS FOR REFERENCE (not included)	DESCRIPTION/COMMENTS
Chevron Procedure PIM-EF-121	Field Hydrostatic Test Schedule, 10 pages
Chevron Metals Craft Manual	Pipe Welding, Fabrication, QC & Documentation Requirements

Remember Safety or Be Remembered

4) b.

A-DRUM
TETRA-ETHYL LEAD
(D-338942)

UT
10-3-05
DBT

CS PIPE

FOR VALVES & FITTING MTL.

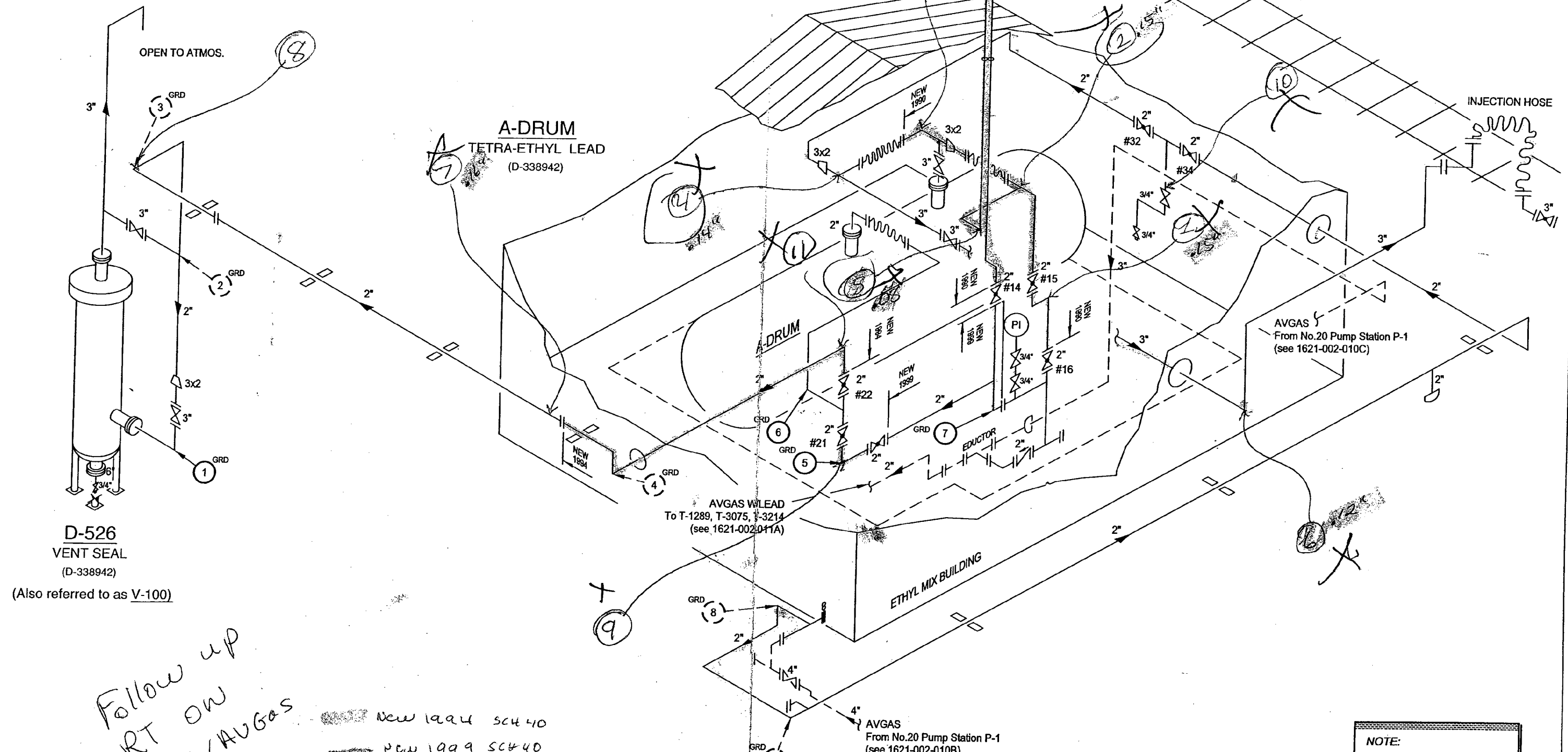
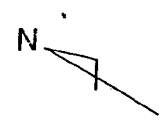
AF1 4" BRONZE FLEX. HOSE (3) GRD

AVGAS W/LEAD
To T-1289, T-3075, T-3214
(see 1621-002-011A)

AVGAS
From No.20 Pump Station P-1
(see 1621-002-010B)

AVGAS
From No.20 Pump Station P-1
(see 1621-002-010C)

NOTE:
Piping Class shown on this
dwn is for replacement ONLY



D-526
VENT SEAL
(D-338942)
(Also referred to as V-100)

Follow up
RT OW
Led/AVGAS
Lines
10
Shots

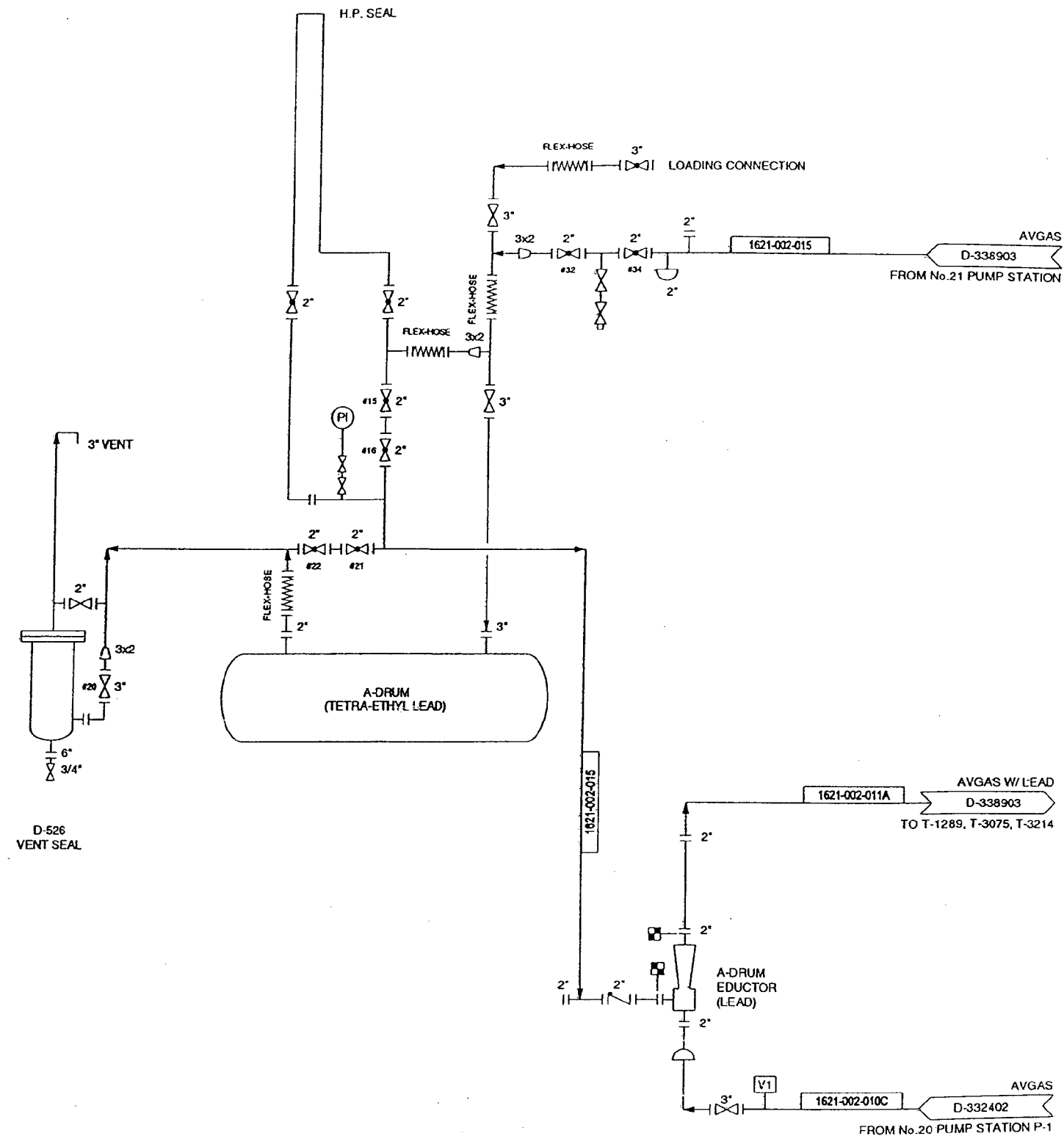
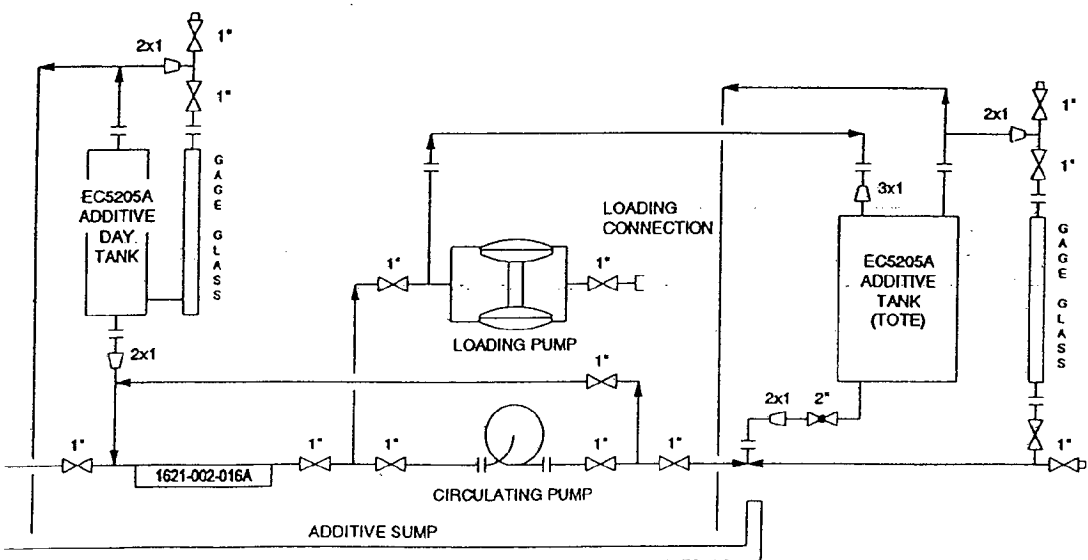
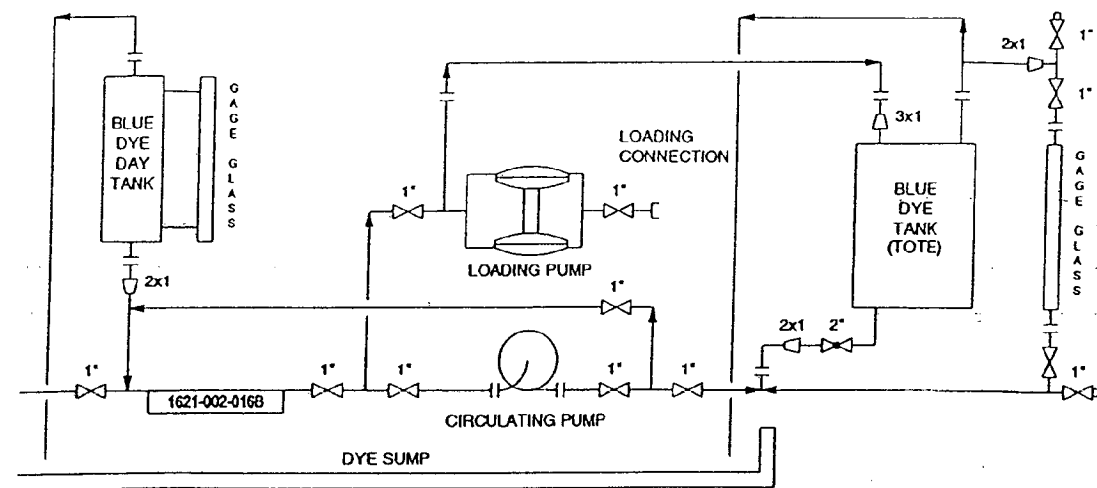
new 1994 SCH 40
new 1999 SCH 40
new 1990 SCH 40

ETHYL MIX BUILDING/LEAD

STATUS: ISO570 COMPLETE		RATING? <input checked="" type="checkbox"/> 150# <input type="checkbox"/> 300#		API-570 <input type="checkbox"/> CLASS I	
MATERIAL: C.S.		SERVICE: LEAD		<input type="checkbox"/> CLASS II	
PIPE CLASS: "AB0"		PWHT: NO		<input type="checkbox"/> CLASS III	
INSULATED? <input type="checkbox"/>					
LINE NAME: ETHYL MIX BUILDING/LEAD					
FROM: A-DRUM CIRCUIT					
TO: A-DRUM EDUCTOR					

12/17/04 mhee	INSPECTION PIPING ISOMETRIC			
	#2 AVGAS / TOLUENE			
	LOWER MAIN TANK FIELD			
	BLENDING AND SHIPPING AREA BUSINESS UNIT			
Z	1621-002-015	4)b.	REV	SHT
			4	1

NOTE:
Piping Class shown on this
dwg is for replacement ONLY
exist. class is UNKNOWN



4)b.



INSPECTION RECOMMENDATION

Fixed Equip. Reliability
Equipment Reliability Group
Richmond Refinery, Richmond CA

I. RECO IDENTIFICATION:

RECO #:	A-DrumFailedNozzle	W/R #:	28119847	Date Written:	6/20/07
Plant:	Ethyl Plant	PRIORITY	RECO TYPE	MAINT. ZONE	
Plt. Eqp. #:	A-Drum	<input type="checkbox"/> Immediate Action	<input type="checkbox"/> Information Only	<input type="checkbox"/> Utilities	
Brass Tag#:		<input type="checkbox"/> Planned Shutdown	<input checked="" type="checkbox"/> Eng. Required	<input type="checkbox"/> Hydro	
		<input checked="" type="checkbox"/> Next Opportunity	<input type="checkbox"/> Eng. Not Req'd	<input type="checkbox"/> D&R	
		<input type="checkbox"/> Routine	<input type="checkbox"/> Other _____	<input checked="" type="checkbox"/> B & S _____	
Service:	Lead (TEL)				

II. MANAGEMENT OF CHANGE:

Level 1 Review Summary	
<input type="checkbox"/> NO	Will new feeds, chemicals or catalysts be used? (See RI-313 for new chemicals, Oprs. Coord for new feeds)
<input type="checkbox"/> NO	Will this work lead to operation outside established limits? Which Equipment? List Equipment if Yes
<input type="checkbox"/> NO	Is this repair or replacement other than "In-kind" ?
<input type="checkbox"/> NO	Does this involve developing new and / or modifying existing procedure?
<input type="checkbox"/> NO	Does this work involve the addition of new equipment? (Send copy of the MOC form to EAD for new equipment)
<input type="checkbox"/> NO	Will this impact upstream or downstream plants? If "YES" ... then which Plants? List Plant (s) if Yes
If any of the above questions were answered "YES", then a Level 2 review is required.	

III. RECO INFORMATION (Summary and Details):

Replace failed 3" nozzle on A-Drum. REC-62457					
Information					
The 3" nozzle (3" nozzle drops down through 6" #4 nozzle) on the A-Drum failed at the top weld; Replacement is required. Code weld procedures are required.					
Required Work:					
1) Replace 3" nozzle (N-4) per Engineering specs.					
See ISO markup on M-Drive "A-DRUM 3IN NOZZLE" for repair location.					
All hot work in this Inspection Recommendation is subject to the "Richmond Refinery – Metal Craft Quality Assurance Procedures Manual;					
Cost Estimate by:	Total Man-Days	Cost per Man-Day	Total Labor Cost:	Total M'trl. Cost:	Total Cost:
Estimator					

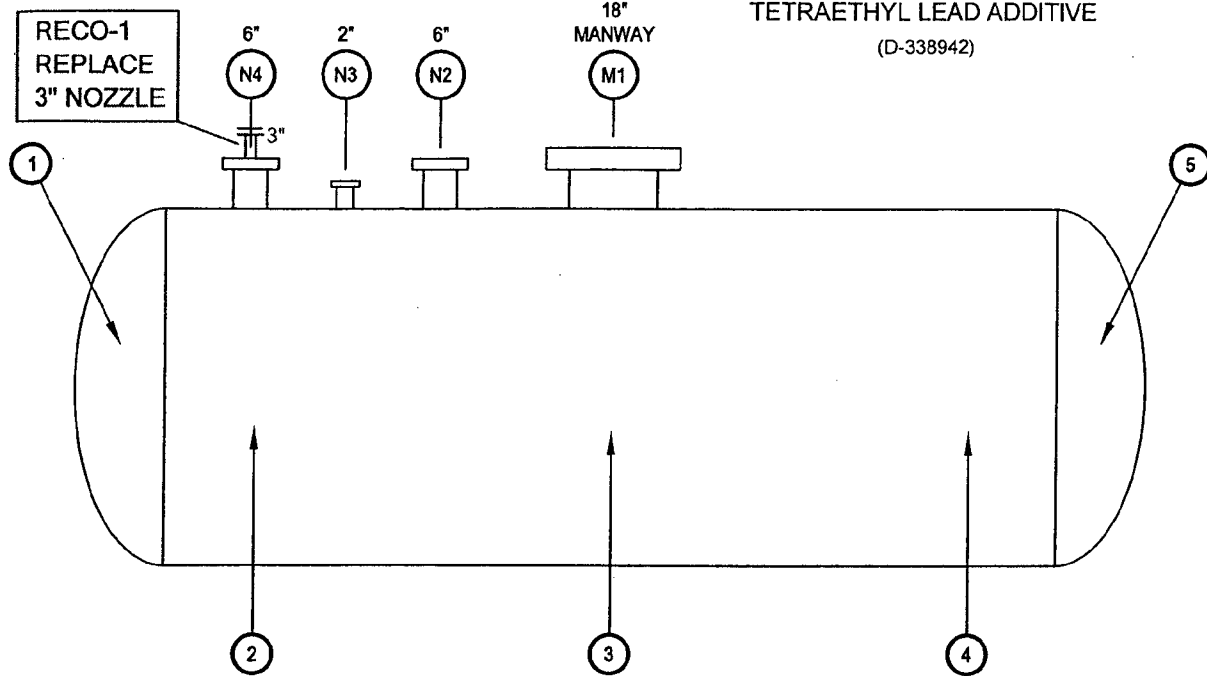
IV. RECO APPROVAL (Enter Name & Phone):

Area Inspector:	Name Shirley Tyree	Phone 2-2724	Engineering:	Name Noer Ibrahim	Phone 2-2508
Lead Inspector:	Name Dan Mason	Phone 2-3287	Operations:	Name Marshall Miller	Phone 2-4002

A-DRUM

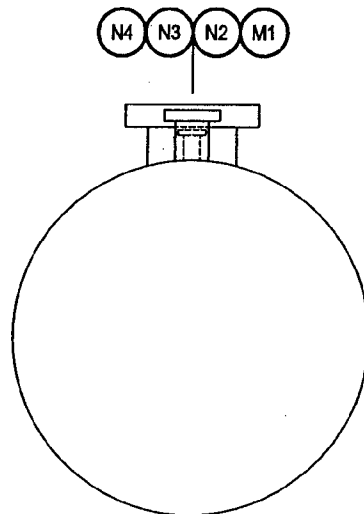
TETRAETHYL LEAD ADDITIVE

(D-338942)



ELEVATION VIEW

LOOKING NORTH



END VIEW

LOOKING EAST

Replace failed 3" nozzle on A-Drum.
REC-62457
filed 6/2007

STATUS: ISO570 COMPLETE		INSULATED? <input type="checkbox"/>		INSPECTION EQUIPMENT DRAWING	
EQUIPMENT NO: A-DRUM				TETRAETHYL LEAD ADDITIVE	
EQUIPMENT SERVICE: TETRAETHYL LEAD LIQUID				#20 PUMP STATION	
EQUIPMENT ID: D-7143				BLENDING AND SHIPPING AREA BUSINESS UNIT	
		12/17/04 mbee		REV 1 SHIT 1	
		Z		1615-A-DRUM 4) c,	



History Brief

For Location ID: A-DRUM

Report Date: August 18, 2008

Data Source: Meridium

Brief Data:

Date Not Available:	6/20/2007	Date Available:	06/20/2007
History Brief Date:	06/20/2007	History Brief ID:	VI-0706177859
Event Type:	Failure	In- Service Date:	06/20/2007
Equipment ID:	A-DRUM	Critical:	3
Asset ID:	D-7143	Reference Material:	
Work Order Nbr:		Incident Event ID:	
History Type:	FXD	Inspection Date:	06/20/2007
Asset Type:	252	Inspection Type:	
Cost Center:	RRI00371		
Unit:	1615 - ETHYL PLANT / NO. 20 PUMP STATION		
Headline:	3" vapor pipe failed (3" inside 6" #4 nozzle)		

Reliability Analysis:

Event Type:	Failure	Worked Performed By:	Other
Cause Category:	Information	Program Status:	
Effect Category:	Leak	Maintainable Item:	Nozzles
Repair Location:		Permanent Repair WO:	
Temporary Repair:	No	Name:	STYR
Save:		Inspected By:	STYR

Findings:

PCA ID:
Inspectable:
Sub Item:
Part:
Discussion:

Condition:
Action:
Location:
Damage Mechanism:
PCA Work Order No :

Reliability Comments:

UPDATE 6/21/07; the pipe was leak sealed with a fiberglass wrap per LSR 17165.
The 3" pipe appeared to be leaking from the top weld on the 3" vapor pipe. Further investigation will be performed when the fresh air requirement is lifted.

5) a.

RADIOGRAPHIC THICKNESS EXAMINATION RECORD

Form 08 (Jan 95)

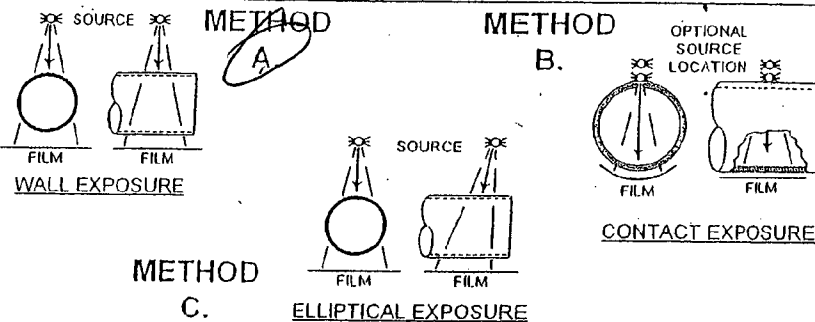
Unit	SYSTEM AND DWG. NO.	TML	PIPE SIZE	RT THICKNESS
B&S	1015A-Draw			
		RT-1	3/4"	.12
		N-2-0	6"	.145
		N-2-98	6"	.144
		N-3-0	2"	.16
		N-3-98	2"	.14
		N-4-0	6"	.148
		N-4-98	6"	.143

DATE: 9-20-07 Page: 1 of 1
 PROJECT NO: 2023152102 SITE: CUSA
 PLANT: B&S #20 Pump Station
 RT CONTRACTOR: P.T.S.
 RADIOGRAPHER: M. Viertel LEVEL: II
 ASSISTANT: T. Schwartz LEVEL: 1

TECHNIQUE DATA

INSPECTION SPECIFICATIONS: Cust. Info
 RT PROCEDURE NO: SP-RT-001 REVISION: 1
 SOURCE: 1912 SOURCE ACTIVITY: 6800 KV 1
 SOURCE TO FILM DIST: Varies SOURCE TO OBJECT DIST: Varies
 MATERIAL THICKNESS: Varies TYPE MATERIAL: 4/s
 THICKNESS COMPARATOR: STANDARD 0.10" FILM TYPE: D-7
 EXPOSURE TIME: Varies DEV. TIME: 5 min

EXPOSURE SKETCH OR ADDITIONAL INFORMATION



COMMENTS:

Perform RT. per - S. Tyree
 on N-2, 3 & 4 - Also D.I. Small
 bore piping.
 Deposits & Corrosion in
 all locations.

REVIEWED BY:

[Signature]

SNT LEVEL:

[Signature]

DATE:

9-20-07 5) b.



RADIOGRAPHIC THICKNESS EXAMINATION RECORD

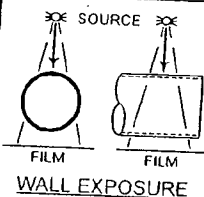
Form 08 (Jan 89)

DATE: 1/7/08 Page: 1 of 1PROJECT NO: 262315-21-01 SITE: CUSAPLANT: #20 pump station / 1615-A-DRUMRT CONTRACTOR: T.C.IRADIOGRAPHER: J. Silva LEVEL: IIASSISTANT: C. Padilla LEVEL: I

TECHNIQUE DATA

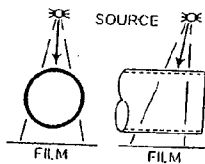
INSPECTION SPECIFICATIONS: Cust. InfoRT PROCEDURE NO: TC-RT-ASME-4 REVISION: 2SOURCE: IR192 SOURCE ACTIVITY: 886u KV: -SOURCE TO FILM DIST: 28" SOURCE TO OBJECT DIST: 21"MATERIAL THICKNESS: 500/190 TYPE MATERIAL: C/STHICKNESS COMPARATOR: STANDARD 0.10" FILM TYPE: D-7EXPOSURE TIME: 2min DEV. TIME: 5min

EXPOSURE SKETCH OR ADDITIONAL INFORMATION



WALL EXPOSURE

METHOD A

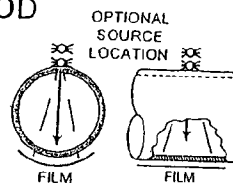


ELLIPTICAL EXPOSURE

METHOD C

METHOD B

B.



CONTACT EXPOSURE

OPTIONAL
SOURCE
LOCATION

COMMENTS:

VIEWED BY:

SNT LEVEL:

DATE:

5) b. 1



RADIOGRAPHIC THICKNESS EXAMINATION RECORD

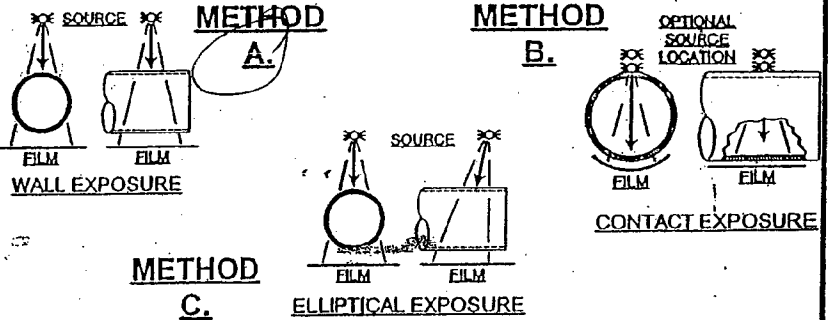
Form 1071 (J-81)

DATE: 4-28-08 Page: 1 of 1
PROJECT NO: 26231521 SITE: RICHMOND
PLANT: #70
RT CONTRACTOR: TC INSPECTION
RADIOGRAPHER: SHAWN WEISS LEVEL: II
ASSISTANT: Ernie Holloway LEVEL: I

TECHNIQUE DATA

INSPECTION SPECIFICATIONS: ASME V
RT PROCEDURE NO: _____ REVISION: 4
SOURCE: IR-192 SOURCE ACTIVITY: 35 KV: _____
SOURCE TO FILM DIST: VAR. SOURCE TO OBJECT DIST: VAR.
MATERIAL THICKNESS: VAR. TYPE MATERIAL: C15
THICKNESS COMPARATOR: STANDARD 0.10" FILM TYPE: _____
EXPOSURE TIME: VARIES DEV. TIME: 5 MIN @ 68°F

EXPOSURE SKETCH OR ADDITIONAL INFORMATION



COMMENTS: 0° WAS SHOT FROM SOUTH TO NORTH
90° WAS SHOT FROM EAST TO WEST

NOTE: NOZ # 2 90° WAS SHOT FROM WEST TO EAST

REVIEWED BY:

SNT LEVEL: IIDATE: 4-28-085)b.



RADIOGRAPHIC THICKNESS EXAMINATION RECORD

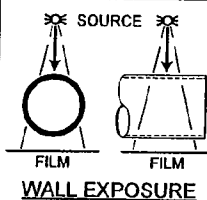
Form 07a (Jan 99)

SYSTEM
AND
DWG. NO.POINT
NO.PIPE
SIZERT
THICKNESSDATE: AUG 06 2008 Page: 1 of 1PROJECT NO: 26231521-01 SITE: CUSAPLANT: 1615 A DRUMRT CONTRACTOR: TC INSPECTIONS INC.RADIOGRAPHER: JOHN SILVA LEVEL: 3ASSISTANT: ANTHONY DUPIRE LEVEL: 3

TECHNIQUE DATA

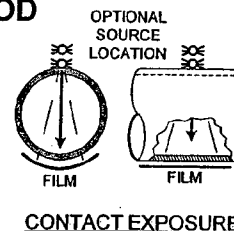
INSPECTION SPECIFICATIONS: ASME SEC-VRT PROCEDURE NO: TC-RT-WALL REVISION: 01SOURCE: IR 192 SOURCE ACTIVITY: 50 Ci KV: —SOURCE TO FILM DIST: VARIOUS SOURCE TO OBJECT DIST: VARIOUSMATERIAL THICKNESS: VARIOUS TYPE MATERIAL: C/STHICKNESS COMPARATOR: STANDARD 0.10" FILM TYPE: D7EXPOSURE TIME: 6 MIN. DEV. TIME: 5 MIN @ 68°F

EXPOSURE SKETCH OR ADDITIONAL INFORMATION

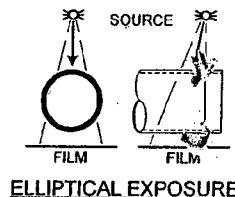


METHOD
A.

METHOD
B.



METHOD
C.



COMMENTS:

REVIEWED BY:

SNT LEVEL:

DATE:

5) b.

Detailed Air Monitoring Results by Substance and Employee - Chevron Custom Report

Sample Date Range from 07/30/2008 to 08/19/2008

Location: RICHMOND, CA

Approved = Yes

Rejected = No

Substance	Sample No	Sample Date	Employee Name	Job Position	Duration (min)	Sample Location	Result	Sample Type	OEL
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TETRAETHYL LEAD AS PB

322735	7/30/2008	Diaz, Eliseo	CONTRACTOR, REF	184	TEL railcar unloading at Ethyl Plant	< 0.0021 mg/m3	TWA	0.075 mg/m3
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Comments: Stand-by for operators connecting the hose to TEL railcar that took approximately 20 minutes. Stand-by stayed near area during the unloading that lasted approximately 2 hours. Disconnecting the hose took approximately 20 minutes.

322734	7/30/2008	Ma, Jonathan	OPERATOR TRAINEE	189	TEL railcar unloading at Ethyl Plant	< 0.0021 mg/m3	TWA	0.075 mg/m3
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Comments: Connecting hose to TEL railcar took approximately 20 minutes. Operators stayed near area during the unloading that lasted approximately 2 hours. Disconnecting the hose took approximately 20 minutes.

322733	7/30/2008	Reyes, Bernabe	OPERATOR	193	Railcar at Ethyl Plant using temporary system	< 0.0021 mg/m3	TWA	0.075 mg/m3
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Comments: Connecting hose to TEL railcar took approximately 20 minutes. Operators stayed near area during the unloading that lasted approximately 2 hours. Disconnecting the hose took approximately 20 minutes.